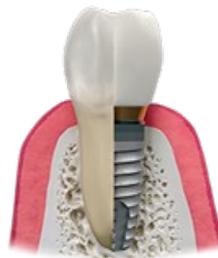


Presentation notes to accompany BSP webinar 10 Jul 2018:

IMPLANT SURFACE DEBRIDEMENT FOR MANAGEMENT OF PERI-IMPLANT MUCOSITIS



by

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Introduction & Background

According to the literature, complications associated with dental implants are presenting more often than ever, and failure is more likely in patients who are not enrolled in regular maintenance programs (Costa et al, 2012) and who have a previous history of or active periodontal disease. Several systematic reviews of the literature report strong evidence for plaque (Mombelli et al, 2012) as a risk factor for peri-implant mucositis (Renvert & Polyzois, 2015). Mucositis is a reversible inflammation of the soft tissues, and a pre-cursor for peri-implantitis (Salvi & Ramseier, 2015) and this webinar will explore options to manage peri-implant mucositis (Renvert et al, 2008) using a non-surgical approach (Heitz-Mayfield & Mombelli 2014, Lang & Berglundh 2011).

The presentation will include an explanation of the key terminology and a brief review of recent scientific literature relating to safe and effective implant surface debridement (SEM studies). We will take a look at current hand and powered instruments, discuss their adaption and areas of use and finally discuss the importance of patient self-care and use of specialised implant products and make suggestions to improve adherence to maintenance recommendations.

New Classification of Periodontal & Peri-implant diseases:

Reference & link:

Berglundh T, Armitage G, et al. Peri-implant diseases and conditions: Consensus report of workgroup 4 of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions. J Clin Periodontol. 2018;45(Suppl 20):S286–S291. <https://doi.org/10.1111/jcpe.12957>

Peri-implant Health:

It was agreed that peri-implant health is characterised by the absence of clinical signs of inflammation, including BOP / Suppuration on probing.

Reference & link:

Araujo MG, Lindhe J. Peri-implant health. J Clin Periodontol. 2018;45(Suppl 20):S230–S236.

<https://doi.org/10.1111/jcpe.12952>

Peri-implant mucositis (PIM):

DENTAL-PERIODONTAL EDUCATION

The main clinical characteristic of peri-implant mucositis is bleeding on gentle probing. Erythema, swelling, and/or suppuration may also be present. An increase in probing depth is often observed in the presence of peri-implant mucositis due to swelling or decrease in probing resistance. There is strong evidence from animal and human experimental studies that plaque is the etiological factor for peri-implant mucositis.

Reference & link:

Heitz-Mayfield LJA, Salvi GE. Peri-implant mucositis. J Clin Periodontol. 2018;45

(Suppl 20):S237–S245. <https://doi.org/10.1111/jcpe.12953>

Aetiology & Risk factors:

In two 10-year longitudinal studies, peri-implantitis was assessed and correlated with a history of periodontitis. Karoussis et al. provided implant therapy to 45 patients without a history of periodontitis. A total of eight patients were treated with implants after having successfully completed periodontal therapy. The 10-year incidence of peri-implantitis (case definition: PD \geq 5 mm,

BOP+ and annual bone loss >0.2 mm) in the non-periodontitis group was 6% (implant level) compared to 29% in subjects with a history of periodontitis.

Roccuzzo et al. followed 101 patients provided with dental implants after having been categorized as 1) periodontally not compromised, 2) moderately compromised and 3) severely compromised. The authors reported that both the frequency of implant sites demonstrating PD ≥ 6 mm (2%, 16%, 27%, respectively) and bone loss ≥ 3 mm (5%, 11%, 15%, respectively) differed significantly between groups. The results also showed that treatment of peri-implantitis was more time consuming in patients with a history of periodontitis.

In a follow-up study of 80 patients presenting with mucositis at baseline, the incidence of peri-implantitis over 5 years was assessed by Costa et al. The authors observed an overall incidence of peri-implantitis of 31%. Patients suffering from periodontitis at the final examination had significantly higher odds to also have developed peri-implantitis when compared to individuals without periodontitis (OR 9).

A number of cross-sectional studies reported on prevalence of peri-implantitis and analyzed associations with either a history of periodontitis or current periodontitis. In a study including 216 patients were evaluated 9 to 14 years after implant therapy, Roos-Jansåker et al. reported that implants placed in patients with a history of periodontitis had significantly higher odds (OR 5) for peri-implantitis when compared to implants in patients without.

Koldsland et al. reported similar findings after examining 109 subjects with 1 to 16 years of follow-up.^{94,95} Thus, patients with a history of periodontitis were found to be at higher risk for peri-implantitis (OR 6).

Several subsequent studies confirmed this association with varying degrees of strength. Other studies correlated current periodontitis with peri-implantitis, also reporting strong associations. In fact, Daubert et al. found that severe periodontitis at follow-up was the strongest indicator for peri-implantitis of all variables examined, presenting with an unadjusted risk ratio of 7.

Derks et al., in a 9-year follow-up including 588 patients reported an odds ratio of 4 for patients with current periodontitis.

While the majority of publications is in general agreement when examining the association between periodontitis and peri-implantitis, it should also be noted that conflicting reports exist.

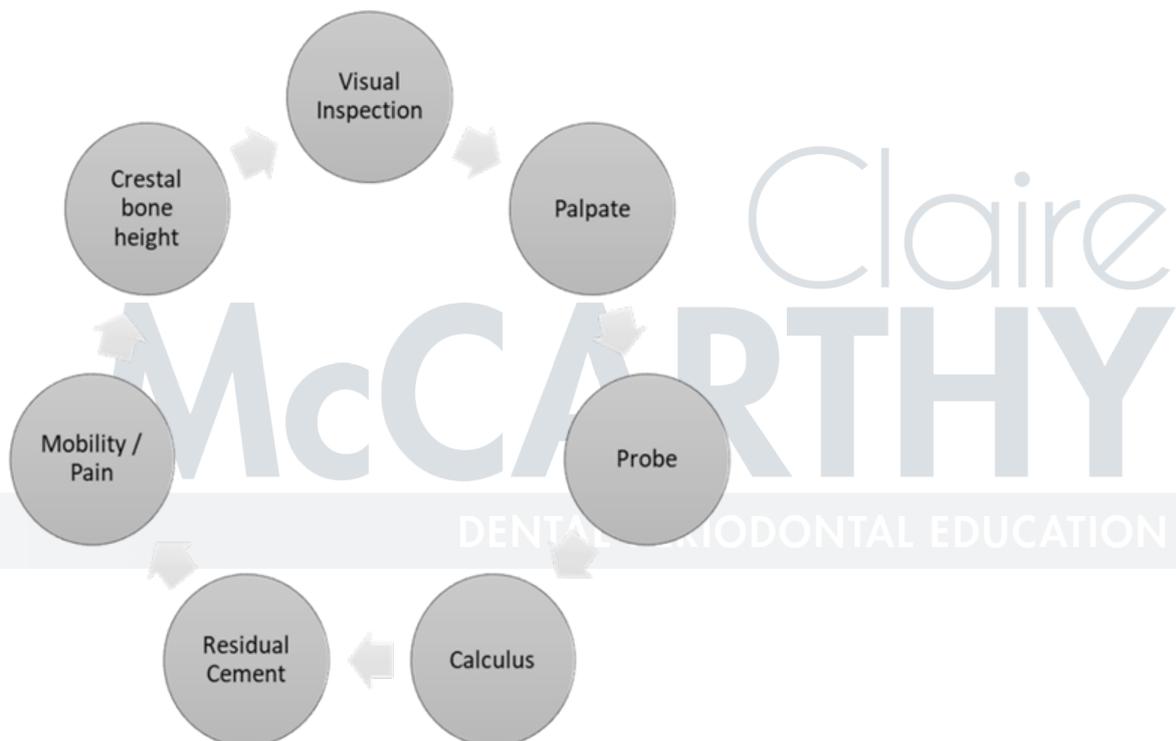
Conclusion: There is strong evidence from longitudinal and cross-sectional studies that a history of periodontitis constitutes a risk factor/indicator for peri-implantitis.

The primary aetiology of implant and peri-implantitis is considered to be bacterial infections. After installation in the oral cavity, bacterial colonization occurs rapidly on oral implant surfaces (Quirynen et al. 2006, Fu`rst et al. 2007, Salvi et al. 2008), and the development of a tightly fixed layer of plaque binds to the implant surface as a biofilm (Lamont & Jenkinson 2000).

Histopathology:

The parallel or circular orientation of the connective tissue fibres may lead to a more rapid spread of inflammation in the peri-implant mucosa & underlying bone.

Examination sequence:



Visual Inspection:

Visual inspection of the soft tissue surrounding an implant requires the same skills as for detecting signs of gingivitis, a condition that is all too familiar. When looking at the sulcus of the implant, employ those existing skills, and observe for the cardinal signs of inflammation. Take note of subtle colour changes, erythema, any signs of swelling and oedema. Also look at the cuff and observe the space between the margin and the implant. At this stage, look for biofilm and assess effectiveness of patient self-care. Note any supra-gingival calculus deposits.

Palpation Technique:

Place the pad of your thumb and index finger on either side of the alveolar ridge at the apex of the implant. Gently palpate by pressing against the ridge and move upwards in a coronal direction. This is a non-invasive method of checking areas that are difficult to access with a probe. If infection is present, this procedure will draw suppuration up from the base of the implant and to the sulcus area where it is visible.

Probing Implants:

It was assumed that probing the implant–mucosa interface would sever the soft tissue seal and jeopardize the integrity of the adhesion. This issue was examined in a dog study by Etter et al (2002) that documented that already after 5 to 7 days following clinical probing, the soft tissue seal had regenerated to its full extent.

A steady fulcrum is advised and a light grasp of the probe. This will ensure stability and a controlled insertion into the sulcus, slowly extending apically. Pressure of 0.2 Newtons is recommended and it is essential to avoid jabbing the probe at implant sites. A gentle, controlled insertion is advised, using a walking to stroke around the entire circumference of the implant.

Bleeding on probing is a key clinical finding, and that is deemed the most reliable indicator of peri-implant complications, and used to help clinicians identify problems early, and provide indication for further diagnostic tests to reach a diagnosis. The new classification does specify that BoP due to trauma could lead to overtreatment as the soft tissue surrounding a dental implant may be less resilient than natural teeth, and this may increase the risk of false positives

Probing depths are less important, but nevertheless need to be recorded. An increase in probing depths >2mm following initial remodelling may indicate a change in condition around an implant. It is important to remember, that unlike natural teeth, implants have artificially created sulcus to facilitate positioning and emergence profile for aesthetic reasons, and a deep sulcus may be perfectly healthy and natural for an implant. We are concerned with increasing probing depths, and bleeding & / suppuration.

Etter TH, Håkanson I, Lang NP, Trejo PM, Caffesse RG. Healing after standardized clinical probing of the perimplant soft tissue seal: a histomorphometric study in dogs. Clin Oral Implants Res. 2002;13:571–580

J Clin Periodontol. 2008 Sep;35(8 Suppl):282-5. Peri-implant diseases: Consensus Report of the Sixth European Workshop on Periodontology. Lindhe J1, Meyle J; Group D of European Workshop on Periodontology.

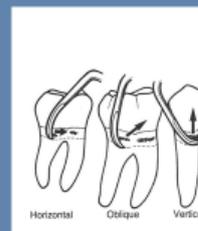
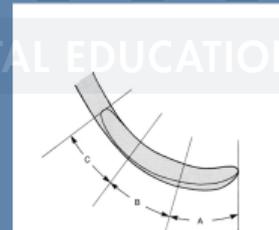
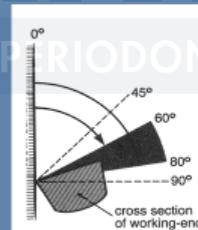
Salvi et al. Diagnostic parameters for monitoring peri-implant conditions. Inter J of Oral Maxillo Implants. 2004; 19 Suppl. 116-117.

Table 1. Diagnostic criteria for peri-implant mucositis

Author (reference)	Mucositis definition
Heitz-Mayfield et al. (14)	Bleeding on probing and no bone loss
Thone-Muhling et al. (62)	Bleeding on probing and/or gingival index ≥ 1 on at least one site and no bone loss in the previous 2 years
Ramberg et al. (29)	Bleeding on probing
Porras et al. (28)	Plaque, probing depth ≤ 5 mm and evidence of inflammation by modified bleeding index
Felo et al. (10)	Bleeding on probing, modified gingival index > 1.5 , modified plaque index > 1.5 and probing depth ≤ 3 mm
Ciancio et al. (6)	Bleeding on probing, modified gingival index > 1.5 and modified plaque index > 1.7

Fundamentals of Hand Instrumentation

- Design features
(narrow/wide base/bar & ball socket/ threads)
- Calculus formation: Titanium is not porous
- Technique:
 - Adaption
 - Angulation
 - Lateral Pressure
 - Stroke direction



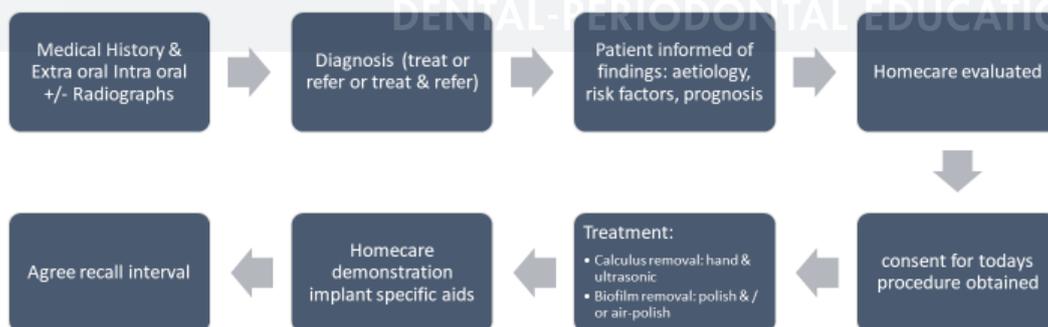
Mode of Action & Technique

- Fluid Lavage
- Mechanical

-
- Tip design features
 - Parallel
 - Light grasp
 - Tapping Stroke
 - Sweeping Stroke
 - Avoid threads
 - Tip & machine compatible
 - Lots of irrigation



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Implant Maintenance Appointment

Thank you for tuning in to this webinar and I hope you found this article useful.